#3

SEQUENCE LISTING

<110> Koide, Shohei

<120> METHOD OF IDENTIFYING POLYPEPTIDE MONOBODIES WHICH BIND TO TARGET PROTEINS AND USE THEREOF

<130> 176/60901

<140> 10/006,760
<141> 2001-11-19

<150> 60/249,756
<151> 2000-11-17

<160> 73

<170> PatentIn Ver. 2.1

<210> 1
<211> 308
<212> DNA
<213> Homo sapiens

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gaaaccggtg gtaactcccc ggttcaggaa ttcactgtac ctggttccaa gtctactgct 180
accatcagcg gcctgaaacc gggtgtcgac tataccatca ctgtatacgc tgttactggc 240
cgtggtgaca gcccagcgag ctccaagcca atctcgatta actaccgtac ctagtaactc 300
gaggatcc 308

<210> 2
<211> 96
<212> PRT
<213> Homo sapiens

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1 5 10 15

Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr Val Arg
20 25 30

Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln
35 40 45

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Glu Phe Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu
     50                  55                  60

Lys Pro Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Gly Arg
 65                  70                  75                  80

Gly Asp Ser Pro Ala Ser Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr
                 85                  90                  95
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<210> 3
<211> 96
<212> PRT
<213> Artificial Sequence

<220>
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<222> (9)
<223> X at position 9 is either Asn or Lys

<400> 3

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Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr Val Arg
             20                  25                  30

Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln
         35                  40                  45

Glu Phe Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu
     50                  55                  60

Lys Pro Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Gly Arg
 65                  70                  75                  80

Gly Asp Ser Pro Ala Ser Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr
                 85                  90                  95
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<210> 4
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<220>
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fusion protein coding region

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<222> (286)..(287)
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nnknnktatt accgtatcac gtacggtgaa accggtggta actccccggt tcaggaattc 180
actgtacctg gttccaagtc tactgctacc atcagcggcc tgaaaccggg tgtcgactat 240
accatcactg tatacgctgt tactggcnnk nnknnknnkn nknnknnktc caagccaatc 300
tcgattaact accgtaccag tggtaccggt ggttcccctc caaaaaagaa gagaaaggta 360
gctggtatca ataaagatat cgaggagtgc aatgccatca ttgagcagtt tatcgactac 420
ctgcgcaccg gacaggagat gccgatggaa atggcggatc aggcgattaa cgtggtgccg 480
ggcatgacgc cgaaaaccat tcttcacgcc gggccgccga tccagcctga ctggctgaaa 540
tcgaatggtt ttcatgaaat tgaagcggat gttaacgata ccagcctctt gctgagtgga 600
gattaactcg aggcatgc 618

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<212> PRT
<213> Artificial Sequence

<220>
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B42-FNfn10 fusion protein

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<222> (38)..(42)
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<220>
<221> UNSURE
<222> (90)..(96)
<223> Xaa at any position can be any amino acid

<400> 5

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Met Asp Tyr Lys Asp Asp Asp Asp Lys Gly Met Gln Val Ser Asp Val
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Pro Thr Asp Leu Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile
             20                  25                  30

Ser Trp Asp Ala Pro Xaa Xaa Xaa Xaa Xaa Tyr Tyr Arg Ile Thr Tyr
         35                  40                  45

Gly Glu Thr Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Pro Gly
     50                  55                  60

Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr
 65                  70                  75                  80

Thr Ile Thr Val Tyr Ala Val Thr Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa
                 85                  90                  95

Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr Ser Gly Thr Gly Gly Ser
            100                 105                 110

Pro Pro Lys Lys Lys Arg Lys Val Ala Gly Ile Asn Lys Asp Ile Glu
        115                 120                 125

Glu Cys Asn Ala Ile Ile Glu Gln Phe Ile Asp Tyr Leu Arg Thr Gly
    130                 135                 140
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```
Gln Glu Met Pro Met Glu Met Ala Asp Gln Ala Ile Asn Val Val Pro
145                 150                 155                 160

Gly Met Thr Pro Lys Thr Ile Leu His Ala Gly Pro Pro Ile Gln Pro
                165                 170                 175

Asp Trp Leu Lys Ser Asn Gly Phe His Glu Ile Glu Ala Asp Val Asn
            180                 185                 190

Asp Thr Ser Leu Leu Leu Ser Gly Asp
        195                 200


<210> 6
<211> 96
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:  FNfn10
      polypeptide monobody

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<222> (28)..(32)
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<220>
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<222> (80)..(86)
<223> Xaa at any position can be any amino acid

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Met Gln Val Ser Asp Val Pro Thr Asp Leu Glu Val Val Ala Ala Thr
  1               5                  10                  15

Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Xaa Xaa Xaa Xaa Xaa
             20                  25                  30

Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln
         35                  40                  45

Glu Phe Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu
     50                  55                  60

Lys Pro Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Gly Xaa
 65                  70                  75                  80
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Xaa Xaa Xaa Xaa Xaa Xaa Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr
85 90 95

<210> 7
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<212> DNA
<213> Artificial Sequence

<220>
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cctccaaaaa agaagagaaa ggtagctggt atcaataaag atatcgagga gtgcaatgcc 120
atcattgagc agtttatcga ctacctgcgc accggacagg agatgccgat ggaaatggcg 180
gatcaggcga ttaacgtggt gccgggcatg acgccgaaaa ccattcttca cgccgggccg 240
ccgatccagc ctgactggct gaaatcgaat ggttttcatg aaattgaagc ggatgttaac 300
gataccagcc tcttgctgag tggagatgcc tccaagcttg gtaccgagct cggatctatg 360
caggtttctg atgttccgac cgacctggaa gttgttgctg cgaccccgnn snnsnnsnns 420
nnsnnsnnsa ctagcctgct gatcagctgg gatgctcctg cagttaccgt gcgttattac 480
cgtatcacgt acggtgaaac cggtggtaac tccccggttc aggaattcac tgtacctggt 540

tccaagtcta ctgctaccat cagcggcctg aaaccgggtg tcgactatac catcactgta 600
tacgctgtta ctggccgtgg tgacagccca gcgagctcca agccaatctc gattaactac 660
cgtacctagt aactcgaggc atgc 684

<210> 8
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: B42-FNfn10
fusion protein

<220>
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Met Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly Leu Asp Ser Thr Gln
1 5 10 15

Ala Met Gly Ala Pro Pro Lys Lys Lys Arg Lys Val Ala Gly Ile Asn
20 25 30

Lys Asp Ile Glu Glu Cys Asn Ala Ile Ile Glu Gln Phe Ile Asp Tyr
35 40 45

Leu Arg Thr Gly Gln Glu Met Pro Met Glu Met Ala Asp Gln Ala Ile
50 55 60

Asn Val Val Pro Gly Met Thr Pro Lys Thr Ile Leu His Ala Gly Pro
65 70 75 80

Pro Ile Gln Pro Asp Trp Leu Lys Ser Asn Gly Phe His Glu Ile Glu
85 90 95

Ala Asp Val Asn Asp Thr Ser Leu Leu Leu Ser Gly Asp Ala Ser Lys
100 105 110

Leu Gly Thr Glu Leu Gly Ser Met Gln Val Ser Asp Val Pro Thr Asp
115 120 125

Leu Glu Val Val Ala Ala Thr Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr
130 135 140

Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr Val Arg Tyr Tyr

145 150 155 160

Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln Glu Phe
165 170 175

Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu Lys Pro
180 185 190

Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Gly Arg Gly Asp
195 200 205

Ser Pro Ala Ser Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr
210 215 220

<210> 9
<211> 103
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FNfn10
polypeptide monobody

<220>
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<222> (18)..(24)
<223> Xaa at any position can be any amino acid

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Met Gln Val Ser Asp Val Pro Thr Asp Leu Glu Val Val Ala Ala Thr
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Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Ser Leu Leu Ile Ser Trp Asp
20 25 30

Ala Pro Ala Val Thr Val Arg Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr
35 40 45

Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Pro Gly Ser Lys Ser
50 55 60

Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr Ile Thr
65 70 75 80

Val Tyr Ala Val Thr Gly Arg Gly Asp Ser Pro Ala Ser Ser Lys Pro
85 90 95

Ile Ser Ile Asn Tyr Arg Thr
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<210> 10
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<212> DNA
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<220>
<223> Description of Artificial Sequence: B42-FNfn10 fusion protein coding region

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atcattgagc agtttatcga ctacctgcgc accggacagg agatgccgat ggaaatggcg 180
gatcaggcga ttaacgtggt gccgggcatg acgccgaaaa ccattcttca cgccgggccg 240
ccgatccagc ctgactggct gaaatcgaat ggttttcatg aaattgaagc ggatgttaac 300
gataccagcc tcttgctgag tggagatgcc tccaagcttg gtaccgagct cggatctatg 360
caggtttctg atgttccgac cgacctggaa gttgttgctg cgaccccgac tagcctgctg 420
atcagctggg atgctcctnn knnknnknnk nnktattacc gtatcacgta cggtgaaacc 480
ggtggtaact ccccggttca ggaattcact gtacctggtt ccaagtctac tgctaccatc 540
agcggcctga aaccgggtgt cgactatacc atcactgtat acgctgttac tggcnnknnk 600

nnknnknnkn nknnktccaa gccaatctcg attaactacc gtacctagta actcgaggca 660
tgcatctaga gggccgcatc atgtaattag ttatgtcacg ctta 704

<210> 11
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: B42-FNfn10
fusion protein

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be any amino acid

<220>
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<222> (199)..(205)
<223> Xaa at positions 199, 200, 201, 202, 203, 204, and
205 can be any amino acid

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Met Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly Leu Asp Ser Thr Gln
1 5 10 15

Ala Met Gly Ala Pro Pro Lys Lys Lys Arg Lys Val Ala Gly Ile Asn
20 25 30

Lys Asp Ile Glu Glu Cys Asn Ala Ile Ile Glu Gln Phe Ile Asp Tyr
35 40 45

Leu Arg Thr Gly Gln Glu Met Pro Met Glu Met Ala Asp Gln Ala Ile
50 55 60

Asn Val Val Pro Gly Met Thr Pro Lys Thr Ile Leu His Ala Gly Pro
65 70 75 80

Pro Ile Gln Pro Asp Trp Leu Lys Ser Asn Gly Phe His Glu Ile Glu
85 90 95

Ala Asp Val Asn Asp Thr Ser Leu Leu Leu Ser Gly Asp Ala Ser Lys
100 105 110

Leu Gly Thr Glu Leu Gly Ser Met Gln Val Ser Asp Val Pro Thr Asp

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        115                 120                 125

Leu Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile Ser Trp Asp
    130                 135                 140

Ala Pro Xaa Xaa Xaa Xaa Xaa Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr
145                 150                 155                 160

Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Pro Gly Ser Lys Ser
                165                 170                 175

Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr Ile Thr
            180                 185                 190

Val Tyr Ala Val Thr Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser Lys Pro
        195                 200                 205

Ile Ser Ile Asn Tyr Arg Thr
    210                 215


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<212> PRT
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<220>
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      polypeptide monobody

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<222> (28)..(32)
<223> Xaa at positions 28, 29, 30, 31, and 32 can be any
      amino acid

<220>
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<222> (80)..(85)
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      any amino acid

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Met Gln Val Ser Asp Val Pro Thr Asp Leu Glu Val Val Ala Ala Thr
  1               5                  10                  15

Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Xaa Xaa Xaa Xaa Xaa
            20                  25                  30
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Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln
35 40 45

Glu Phe Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu
50 55 60

Lys Pro Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Gly Xaa
65 70 75 80

Xaa Xaa Xaa Xaa Xaa Xaa Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr
85 90 95

<210> 13
<211> 687
<212> DNA
<213> Artificial Sequence

<220>
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fusion protein coding region

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<220>
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<220>
<221> unsure
<222> (627)
<223> K at position 627 can be G or T

<220>
<221> unsure
<222> (630)
<223> K at position 630 can be G or T

<220>
<221> unsure
<222> (633)
<223> K at position 633 can be G or T

<220>
<221> unsure
<222> (636)
<223> K at position 636 can be G or T

<220>
<221> unsure
<222> (639)
<223> K at position 639 can be G or T

<220>
<221> unsure
<222> (642)
<223> K at position 642 can be G or T

<400> 13
atgggtaagc ctatccctaa ccctctcctc ggtctcgatt ctacacaagc tatgggtgct 60
cctccaaaaa agaagagaaa ggtagctggt atcaataaag atatcgagga gtgcaatgcc 120
atcattgagc agtttatcga ctacctgcgc accggacagg agatgccgat ggaaatggcg 180
gatcaggcga ttaacgtggt gccgggcatg acgccgaaaa ccattcttca cgccgggccg 240

ccgatccagc ctgactggct gaaatcgaat ggttttcatg aaattgaagc ggatgttaac 300
gataccagcc tcttgctgag tggagatgcc tccaagcttg gtaccgagct cggatctatg 360
cgtgtttctg atgttccgcg tgacctggaa gttgttgctg cgaccccgac tagcctgctg 420
atcagctggg atgctcctgc agttaccgtg cgttattacc gtatcacgta cggtgaaacc 480
ggtggtaact ccccggttca ggaattcact gtacctggtt ccaagtctac tgctaccatc 540
agcggcctga aaccgggtgt cgactatacc atcactgtat acgctgttac tggcnnknnk 600
nnknnknnkn nknnknnknn knnknnknnk nnknnknnkn nkaagccaat ctcgattaac 660
taccgtacct agtaactcga ggcatgc 687

<210> 14
<211> 223
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: B42-FNfn10
fusion protein

<220>
<221> UNSURE
<222> (199)..(214)
<223> Xaa at positions 199, 200, 201, 202, 203, 204,
205, 206, 207, 208, 209, 210, 211, 212, 213, and
214 can be any amino acid

<400> 14
Met Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly Leu Asp Ser Thr Gln
1 5 10 15

Ala Met Gly Ala Pro Pro Lys Lys Lys Arg Lys Val Ala Gly Ile Asn
20 25 30

Lys Asp Ile Glu Glu Cys Asn Ala Ile Ile Glu Gln Phe Ile Asp Tyr
35 40 45

Leu Arg Thr Gly Gln Glu Met Pro Met Glu Met Ala Asp Gln Ala Ile
50 55 60

Asn Val Val Pro Gly Met Thr Pro Lys Thr Ile Leu His Ala Gly Pro
65 70 75 80

Pro Ile Gln Pro Asp Trp Leu Lys Ser Asn Gly Phe His Glu Ile Glu
85 90 95

Ala Asp Val Asn Asp Thr Ser Leu Leu Leu Ser Gly Asp Ala Ser Lys
100 105 110

Leu Gly Thr Glu Leu Gly Ser Met Arg Val Ser Asp Val Pro Arg Asp
115 120 125

Leu Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile Ser Trp Asp
130 135 140

Ala Pro Ala Val Thr Val Arg Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr
145 150 155 160

Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Pro Gly Ser Lys Ser
165 170 175

Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr Ile Thr
180 185 190

Val Tyr Ala Val Thr Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
195 200 205

Xaa Xaa Xaa Xaa Xaa Xaa Lys Pro Ile Ser Ile Asn Tyr Arg Thr
210 215 220

<210> 15
<211> 104
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FNfn10 polypeptide monobody

<220>
<221> UNSURE
<222> (80)..(95)
<223> Xaa at positions 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, and 95 can be any amino acid

<400> 15
Met Arg Val Ser Asp Val Pro Arg Asp Leu Glu Val Val Ala Ala Thr
1 5 10 15

Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr Val Arg
20 25 30

Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln
35 40 45

Glu Phe Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu
50 55 60

Lys Pro Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Gly Xaa
65 70 75 80

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Lys
85 90 95

Pro Ile Ser Ile Asn Tyr Arg Thr
100

<210> 16
<211> 663
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: B42-FNfn10
fusion protein coding region

<400> 16
atgggtaagc ctatccctaa ccctctcctc ggtctcgatt ctacacaagc tatgggtgct 60
cctccaaaaa agaagagaaa ggtagctggt atcaataaag atatcgagga gtgcaatgcc 120
atcattgagc agtttatcga ctacctgcgc accggacagg agatgccgat ggaaatggcg 180
gatcaggcga ttaacgtggt gccgggcatg acgccgaaaa ccattcttca cgccgggccg 240
ccgatccagc ctgactggct gaaatcgaat ggttttcatg aaattgaagc ggatgttaac 300
gataccagcc tcttgctgag tggagatgcc tccaagcttg gtaccgagct cggatctatg 360
caggtttctg atgttccgac cgacctggaa gttgttgctg cgaccccgac tagcctgctg 420
atcagctggg atgctcctgc agttaccgtg cgttattacc gtatcacgta cggtgaaacc 480
ggtggtaact ccccggttca ggaattcact gtacctggtt ccaagtctac tgctaccatc 540
agcggcctga aaccgggtgt cgactatacc atcactgtat acgctgttac tggccgtggt 600
gacagcccag cgagctccaa gccaatctcg attaactacc gtacctagta actcgaggca 660
tgc 663

<210> 17
<211> 215
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: B42-FNfn10
fusion protein

<400> 17
Met Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly Leu Asp Ser Thr Gln

```
  1               5                  10                  15

Ala Met Gly Ala Pro Pro Lys Lys Lys Arg Lys Val Ala Gly Ile Asn
            20                  25                  30

Lys Asp Ile Glu Glu Cys Asn Ala Ile Ile Glu Gln Phe Ile Asp Tyr
        35                  40                  45

Leu Arg Thr Gly Gln Glu Met Pro Met Glu Met Ala Asp Gln Ala Ile
    50                  55                  60

Asn Val Val Pro Gly Met Thr Pro Lys Thr Ile Leu His Ala Gly Pro
65                  70                  75                  80

Pro Ile Gln Pro Asp Trp Leu Lys Ser Asn Gly Phe His Glu Ile Glu
                85                  90                  95

Ala Asp Val Asn Asp Thr Ser Leu Leu Leu Ser Gly Asp Ala Ser Lys
            100                 105                 110

Leu Gly Thr Glu Leu Gly Ser Met Gln Val Ser Asp Val Pro Thr Asp
        115                 120                 125

Leu Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile Ser Trp Asp
    130                 135                 140

Ala Pro Ala Val Thr Val Arg Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr
145                 150                 155                 160

Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Pro Gly Ser Lys Ser
                165                 170                 175

Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr Ile Thr
            180                 185                 190

Val Tyr Ala Val Thr Gly Arg Gly Asp Ser Pro Ala Ser Ser Lys Pro
        195                 200                 205

Ile Ser Ile Asn Tyr Arg Thr
    210                 215
```

<210> 18
<211> 1542
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
lexA-ER(alpha)EF fusion protein

<400> 18
atgaaagcgt taacggccag gcaacaagag gtgtttgatc tcatccgtga tcacatcagc 60
cagacaggta tgccgccgac gcgtgcggaa atcgcgcagc gtttggggtt ccgttcccca 120
aacgcggctg aagaacatct gaaggcgctg gcacgcaaag gcgttattga aattgtttcc 180
ggcgcatcac gcgggattcg tctgttgcag gaagaggaag aagggttgcc gctggtaggt 240
cgtgtggctg ccggtgaacc acttctggcg caacagcata ttgaaggtca ttatcaggtc 300
gatccttcct tattcaagcc gaatgctgat ttcctgctgc gcgtcagcgg gatgtcgatg 360
aaagatatcg gcattatgga tggtgacttg ctggcagtgc ataaaactca ggatgtacgt 420
aacggtcagg tcgttgtcgc acgtattgat gacgaagtta ccgttaagcg cctgaaaaaa 480
cagggcaata aagtcgaact gttgccagaa aatagcgagt ttaaaccaat tgtcgtagat 540
cttcgtcagc agagcttcac cattgaaggg ctggcggttg gggttattcg caacggcgac 600
tggctggaat tcaagcttga gctcggcggc agcggtatga tcaaacgctc taagaagaac 660
agcctggcct tgtccctgac ggccgaccag atggtcagtg ccttgttgga tgctgagccc 720
cccatactct attccgagta tgatcctacc agacccttca gtgaagcttc gatgatgggc 780
ttactgacca acctggcaga cagggagctg gttcacatga tcaactgggc gaagagggtg 840
ccaggctttg tggatttgac cctccatgat caggtccacc ttctagaatg tgcctggcta 900
gagatcctga tgattggtct cgtctggcgc tccatggagc acccagtgaa gctactgttt 960
gctcctaact tgctcttgga caggaaccag ggaaaatgtg tagagggcat ggtggagatc 1020
ttcgacatgc tgctggctac atcatctcgg ttccgcatga tgaatctgca gggagaggag 1080
tttgtgtgcc tcaaatctat tattttgctt aattctggag tgtacacatt tctgtccagc 1140
accctgaagt ctctggaaga gaaggaccat atccaccgag tcctggacaa gatcacagac 1200
actttgatcc acctgatggc caaggcaggc ctgaccctgc agcagcagca ccagcggctg 1260
gcccagctcc tcctcatcct ctcccacatc aggcacatga gtaacaaagg catggagcat 1320
ctgtacagca tgaagtgcaa gaacgtggtg cccctctatg acctgctgct ggagatgctg 1380
gacgcccacc gcctacatgc gcccactagc cgtggagggg catccgtgga ggagacggac 1440
caaagccact tggccactgc gggctctact tcatcgcatt ccttgcaaaa gtattacatc 1500
acgggggagg cagagggttt ccctgccaca gtctgactcg ag 1542

<210> 19
<211> 511
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
lexA-ER(alpha)EF fusion protein

<400> 19
Met Lys Ala Leu Thr Ala Arg Gln Gln Glu Val Phe Asp Leu Ile Arg
1 5 10 15

Asp His Ile Ser Gln Thr Gly Met Pro Pro Thr Arg Ala Glu Ile Ala
20 25 30

Gln Arg Leu Gly Phe Arg Ser Pro Asn Ala Ala Glu Glu His Leu Lys
35 40 45

Ala Leu Ala Arg Lys Gly Val Ile Glu Ile Val Ser Gly Ala Ser Arg
50 55 60

Gly Ile Arg Leu Leu Gln Glu Glu Glu Glu Gly Leu Pro Leu Val Gly
65 70 75 80

Arg Val Ala Ala Gly Glu Pro Leu Leu Ala Gln Gln His Ile Glu Gly
85 90 95

His Tyr Gln Val Asp Pro Ser Leu Phe Lys Pro Asn Ala Asp Phe Leu
100 105 110

Leu Arg Val Ser Gly Met Ser Met Lys Asp Ile Gly Ile Met Asp Gly
115 120 125

Asp Leu Leu Ala Val His Lys Thr Gln Asp Val Arg Asn Gly Gln Val
130 135 140

Val Val Ala Arg Ile Asp Asp Glu Val Thr Val Lys Arg Leu Lys Lys
145 150 155 160

Gln Gly Asn Lys Val Glu Leu Leu Pro Glu Asn Ser Glu Phe Lys Pro
165 170 175

Ile Val Val Asp Leu Arg Gln Gln Ser Phe Thr Ile Glu Gly Leu Ala
180 185 190

Val Gly Val Ile Arg Asn Gly Asp Trp Leu Glu Phe Lys Leu Glu Leu
195 200 205

Gly Gly Ser Gly Met Ile Lys Arg Ser Lys Lys Asn Ser Leu Ala Leu
210 215 220

Ser Leu Thr Ala Asp Gln Met Val Ser Ala Leu Leu Asp Ala Glu Pro
225 230 235 240

Pro Ile Leu Tyr Ser Glu Tyr Asp Pro Thr Arg Pro Phe Ser Glu Ala
245 250 255

Ser Met Met Gly Leu Leu Thr Asn Leu Ala Asp Arg Glu Leu Val His
260 265 270

Met Ile Asn Trp Ala Lys Arg Val Pro Gly Phe Val Asp Leu Thr Leu
275 280 285

```
His Asp Gln Val His Leu Leu Glu Cys Ala Trp Leu Glu Ile Leu Met
    290                 295                 300

Ile Gly Leu Val Trp Arg Ser Met Glu His Pro Val Lys Leu Leu Phe
305                 310                 315                 320

Ala Pro Asn Leu Leu Leu Asp Arg Asn Gln Gly Lys Cys Val Glu Gly
                325                 330                 335

Met Val Glu Ile Phe Asp Met Leu Leu Ala Thr Ser Ser Arg Phe Arg
            340                 345                 350

Met Met Asn Leu Gln Gly Glu Glu Phe Val Cys Leu Lys Ser Ile Ile
        355                 360                 365

Leu Leu Asn Ser Gly Val Tyr Thr Phe Leu Ser Ser Thr Leu Lys Ser
    370                 375                 380

Leu Glu Glu Lys Asp His Ile His Arg Val Leu Asp Lys Ile Thr Asp
385                 390                 395                 400

Thr Leu Ile His Leu Met Ala Lys Ala Gly Leu Thr Leu Gln Gln Gln
                405                 410                 415

His Gln Arg Leu Ala Gln Leu Leu Leu Ile Leu Ser His Ile Arg His
            420                 425                 430

Met Ser Asn Lys Gly Met Glu His Leu Tyr Ser Met Lys Cys Lys Asn
        435                 440                 445

Val Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp Ala His Arg
    450                 455                 460

Leu His Ala Pro Thr Ser Arg Gly Gly Ala Ser Val Glu Glu Thr Asp
465                 470                 475                 480

Gln Ser His Leu Ala Thr Ala Gly Ser Thr Ser Ser His Ser Leu Gln
                485                 490                 495

Lys Tyr Tyr Ile Thr Gly Glu Ala Glu Gly Phe Pro Ala Thr Val
            500                 505                 510
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<210> 20
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: protein

<220>
<221> UNSURE
<222> (2)..(3)
<223> X at any position can be any amino acid

<400> 20
Leu Xaa Xaa Leu Leu
1 5

<210> 21
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: endoplasmic reticulum localization signal

<400> 21
Lys Asp Glu Leu
1

<210> 22
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: BC loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 22
Trp Tyr Gln Gly Arg
1 5

<210> 23
<211> 5
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: BC loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 23
Pro Arg Thr Lys Gln
1 5

<210> 24
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: BC loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 24
Val Arg Arg Pro Pro
1 5

<210> 25
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 25
Gly Ile Leu Glu Met Leu Gln
1 5

<210> 26
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 26
Arg Leu Arg Ala Gln Leu Val
1 5

<210> 27
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 27
Pro Val Arg Val Leu Leu Arg
1 5

<210> 28
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 28
Arg Leu Arg Asp Leu Leu Gln
1 5

<210> 29
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 29
Gly Leu Val Ser Leu Leu Arg

1 5

<210> 30
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 30
Arg Lys Val Val Trp Thr Gly
1 5

<210> 31
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pFNB42B5F7 library

<400> 31
Thr Ala Ala Ile Met Val Lys
1 5

<210> 32
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: consensus sequence

<220>
<221> UNSURE
<222> (2)..(3)
<223> X at any position can be an amino acid

<400> 32

Leu Xaa Xaa Met Leu
1 5

<210> 33
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: sequence within helix 12 of estrogen receptor-alpha and estrogen receptor-beta

<400> 33
Leu Leu Glu Met Leu
1 5

<210> 34
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: AB loop sequence for polypeptide monobody in pYT45AB7N library

<400> 34
Trp Thr Trp Val Leu Arg Glu
1 5

<210> 35
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: AB loop sequence for polypeptide monobody in pYT45AB7N library

<400> 35
Trp Val Leu Ile Thr Arg Ser
1 5

<210> 36
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 36
Leu Arg Leu Met Leu Ala Gly
1 5

<210> 37
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 37
Ala Leu Val Glu Met Leu Arg
1 5

<210> 38
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 38
Arg Leu Leu Trp Asn Ser Leu
1 5

<210> 39
<211> 7

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 39
Arg Val Leu Met Thr Leu Leu
1 5

<210> 40
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 40
Gly Leu Arg Arg Leu Leu Arg
1 5

<210> 41
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 41
Gly Leu Arg Gln Met Leu Gly
1 5

<210> 42
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 42
Arg Val Leu His Ser Leu Leu
1 5

<210> 43
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 43
Arg Val Arg Asp Leu Leu Met
1 5

<210> 44
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 44
Arg Val Met Asp Met Leu Leu
1 5

<210> 45
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7

library

<400> 45
Gly Ile Ala Glu Leu Leu Arg
1 5

<210> 46
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 46
Arg Ile Leu Leu Asn Met Leu Thr
1 5

<210> 47
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 47
Gly Gly Trp Leu Trp Cys Val Thr
1 5

<210> 48
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 48

Thr Trp Val Val Arg Arg Val
1 5

<210> 49
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 49
Thr Trp Val Arg Pro Asn Gln
1 5

<210> 50
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 50
Arg Arg Val Pro Ile Trp Cys
1 5

<210> 51
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 51
Arg Arg Val Tyr Asp Phe Leu
1 5

<210> 52
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 52
Leu Arg Gln Met Leu Ala Asp
1 5

<210> 53
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT45B3F7 library

<400> 53
Gly Leu Arg Met Leu Leu Arg
1 5

<210> 54
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 54
Ser Arg Arg Leu Val Glu His Leu Ala Gly Val Glu Val Gln Ala Leu
1 5 10 15

<210> 55
<211> 16

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 55
Leu Val Ala Arg Met Leu Asp Trp Ser Asp Gly Glu Glu Ala Ser Pro
1 5 10 15

<210> 56
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 56
Gln Gly Lys Gly Arg Arg Arg Gly Leu Val Leu Tyr Leu Leu Gly Ser
1 5 10 15

<210> 57
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 57
Arg Leu Arg Glu Leu Leu Ala Glu Ala Ala Gln Ala Ser Asp Gly Glu
1 5 10 15

<210> 58
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 58
Leu Leu Leu Arg Val Gly Cys Gly Cys Arg Leu Val Gly Ser Val Leu
1 5 10 15

<210> 59
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 59
Arg Leu Ser Ile Val Pro Cys Pro Ala Trp Ala Arg Leu Thr Val Leu
1 5 10 15

<210> 60
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 60
Leu Leu Val Gly Leu Leu Leu Leu Arg Gly Ala Arg Ser Gly Ser Thr
1 5 10 15

<210> 61
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16

library

<400> 61
Leu Ile Tyr Gly Leu Leu Ser Gln Pro Glu Glu Arg Asp Glu Trp Arg
1 5 10 15

<210> 62
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 62
Arg Ser Asp Gly Val Leu Leu Arg Leu Leu Ala Gly Gln Arg Asn Ala
1 5 10 15

<210> 63
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 63
Trp Phe Asp His Glu Arg His Gly Met Leu Trp Gln Leu Leu Leu Arg
1 5 10 15

<210> 64
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: FG loop sequence for polypeptide monobody in pYT47F16 library

<400> 64

Arg Leu Trp Cys Leu Leu Gln Arg Lys Gly Arg Asn Pro Ile Asp Met
1 5 10 15

<210> 65
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<210> 68
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<220>
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<400> 68
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<210> 69
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<400> 69
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1 5 10 15

<210> 70
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<400> 70
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1 5 10 15

<210> 71
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<212> PRT
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<400> 71
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1 5 10 15

<210> 72
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<400> 72
Leu Glu Val Arg Val Ala Ala Gly Cys Ile Ala Gly Gly Gly Arg Arg
1 5 10 15

<210> 73
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<400> 73
Arg Leu Trp Arg Met Leu Ser Gly Glu Pro Ala Arg Val Asp His Glu
1 5 10 15